❑ MN15G1601

Type			MN15G1601
ROM (x8-bit)			16 K
RAM (x4-bit)			512
Package			LQFP064-P-1414 *Lead-free
Number of Instructions			103
Minimum Instruction Execution Time			0.5 µs at 1/4 frequency dividing (at 3.0 V to 5.5 V, 8 MHz) 1.0 µs at 1/4 frequency dividing (at 2.4 V to 5.5 V, 4 MHz) 2.0 µs at 1/8 frequency dividing (at 2.0 V to 5.5 V, 4 MHz)* * The lower limit for operation guarantee for EPROM built-in type is 2.3 V.
Interrupts			• RESET • IRQ1 • IRQ2 • IRQ3
Timer Counter			Timer counter 0 : 8-bit × 1 (event count, pulse output, simple pulse width meausurement, PWM output, remote control carrier output) Clock source ····· 1/2, 1/8, 1/32, 1/128 of system clock frequency; 1/1, 1/4, 1/16, 1/64 of XI(OSC) oscillation clock frequency Timer counter 1 : 8-bit × 1 (event count, pulse output, remote control carrier output) Clock source ····· 1/2 of system clock frequency; 1/1, $1/2^{14}$ of OSC oscillation clock frequency; 1/1, $1/2^{6}$ of XI oscillation clock frequency Possible 16-bit cascade connection with timer counter 0 Timer counter 2 : 8-bit × 1 (event count, pulse output, simple pulse width meausurement, PWM output, remote control carrier output, one-shot timer output, trigger start PWM output, trigger start timer output) Clock source ····· 1/2 of system clock frequency; 1/1, 1/2 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; TCI input Timer counter 3 : 8-bit × 1 (event count, pulse output, remote control carrier output, high-functional PWM output) Clock source ····· 1/2 of system clock frequency; 1/1, 1/2 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; TCI input Possible 16-bit cascade connection with timer counter 2 Watchdog timer
Serial Interface			Serial : 8-bit × 1 (synchronous type) Clock source ····· 1/1, 1/2 of system clock frequency; SBT pin input
I/O Pins	**I/O**	35	• Common use : 31 • Specified pull-up resistor available : 27 (software programmable) • Specified output architecture available : Nch open drain / push-pull : 31 (software programmable)
A/D Inputs			10-bit × 8-ch. (with S/H)
LCD			30 segments × 4 commons (1/2 , 1/3 , 1/4 duty)
Zero-Cross Inputs			1
Special Ports			Buzzer output (1 kHz, 2 kHz, 4 kHz : fosc = at 4 MHz)

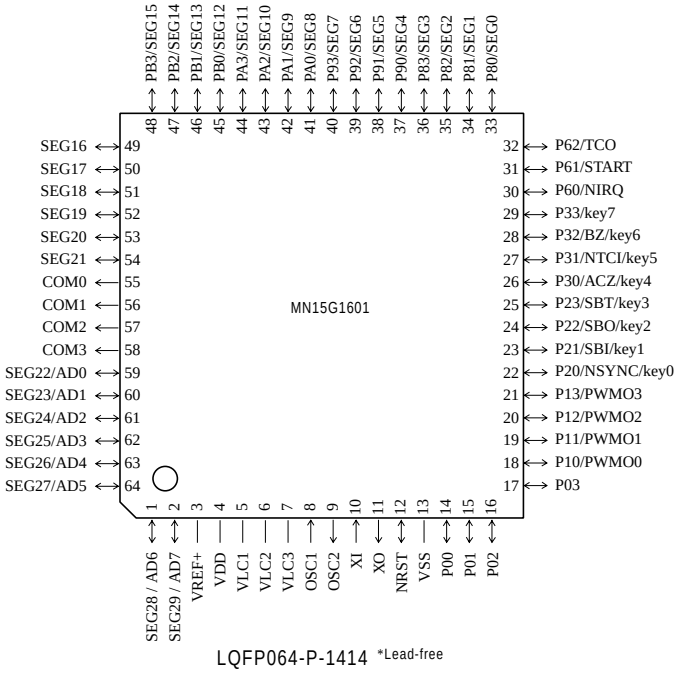
Electrical Characteristics

Supply current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDD1	fosc = 8 MHz (1/8 dividing)		1.8	3.5	mA
	IDD2	fosc = 4 MHz (1/8 dividing)		1.2	2.5	mA
	IDD3	fosc = 32.768 kHz (1/8 dividing)		9.0	20	µA
Supply current at HALT	IDD4	fosc = 4 MHz (1/8 dividing)		0.3	0.6	mA
	IDD5	fosc = 32.768 kHz (1/8 dividing)		1.5	8.0	µA
Supply current at STOP	IDD6	ACZ = 1/2 VDD, Ta = 25°C		4.0	10	µA
	IDD7	ACZ = 1/2 VDD, Ta = –40°C to +85°C			30	µA
	IDD8	Ta = 25°C			1.0	µA
	IDD9	Ta = –40°C to +85°C			5.0	µA

(Ta = –40°C to +85°C, VDD = 5.0 V, VSS = 0 V)

Pin Assignment



LQFP064-P-1414 *Lead-free

SupportTool

In-circuit Emulator	PX-ICE1500 + PX-PRB15G1601-LQFP064-P-1414	
EPROM Built-in Type	Type	MN15GP1601
	ROM (× 8-bit)	16 K
	RAM (× 4-bit)	512
	Minimum instruction execution time	0.5 µs at 1/4 frequency dividing (at 3.0 V to 5.5 V, 8 MHz)
		1.0 µs at 1/4 frequency dividing (at 2.4 V to 5.5 V, 4 MHz)
		2.0 µs at 1/8 frequency dividing (at 2.3 V to 5.5 V, 4 MHz)
	Package	LQFP064-P-1414 *Lead-free

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