

# MN15G0202 / 0402

Type	MN15G0202 (under development) / 0402 (under planning)		
ROM (×8-Bit)	2 K / 4 K		
RAM (×4-Bit)	128 / 128		
Number of Instructions	105		
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)		
Interrupts	• Reset • IRQ1 • IRQ2 • IRQ3		
Timer Counter	Timer Counter 2 : 8-Bit × 1 (Pulse Output, PWM Output, One-Shot Timer Output) Clock Source 1/2, 1/8, 1/32, 1/128 of System Clock, 1/1, 1/4, 1/16, 1/64 of OSC Oscillation Clock Timer Counter 3 : 8-Bit × 1 (Pulse Output, High-Functional PWM Output) Clock Source 1/2 of System Clock, 1/1, 1/2 <sup>n</sup> , 1/2 <sup>m</sup> of OSC Oscillation Clock Timer Counter 2 can be cascade-connected. Watchdog Timer		
I/O Pins	I/O	15	• Common use 11 • Specified pull-up Resistor available 7 (Software Programmable) • Specified output architecture available Nch Open drain / Push-Pull · 11 (Software Programmable) • 4ch LED direct drive available (15 mA / 1.0 V)

## Electrical Characteristics

### Supply Current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating Supply Current	IDD1	fosc = 8 MHz		4	8	mA
	IDD2	fosc = 4 MHz		2	5	mA
	IDD3	fosc = 32 768 kHz		30	60	μA
Supply Current at HALT	IDD4	fosc = 4 MHz		0.6	1.2	mA
	IDD5	fosc = 32 768 kHz		15	30	μA
Supply Current at STOP	IDD6	ACZ = 1/2 VDD, Ta = 25 °C		5	10	μA
	IDD7	ACZ = 1/2 VDD, Ta = -40 °C to +85 °C			20	μA
	IDD8	Ta = 25 °C		0.01	2	μA
	IDD9	Ta = -40 °C to +85 °C			10	μA
Auto reset current consumption	IDD10				t · b · f	μA

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

### A/D Converter Characteristics

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
A/D Conversion Relative Error					±3	LSB
A/D Conversion Time		fosc = 4 MHz (1/4 frequency dividing)			28	μs
Analog Input Voltage	VADIN		VSS		VDD	V

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



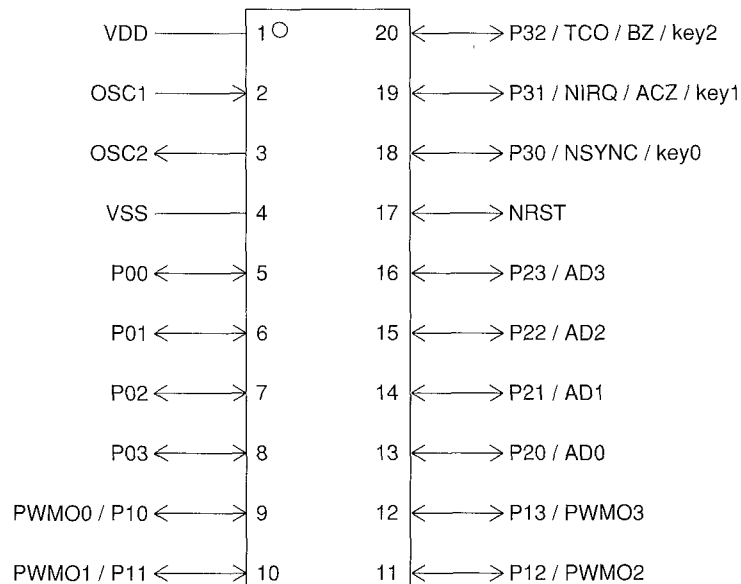
<b>A/D Inputs</b>	10-Bit × 4ch (with S/H)
<b>Zero-Cross Inputs</b>	1
<b>Special Ports</b>	Buzzer Output (1 kHz, 2 kHz, 4 kHz fosc = at 4 MHz)
<b>Notes</b>	Auto-Reset circuit selectable (Mask option)
<b>Package</b>	SOP020-P-0300

### Support Tool

<b>In-Circuit Emulator</b>	PX-ICE1500 + PX-PRB15G0202
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<b>EPROM built-in Type</b>	<b>Type</b>	MN15GP0402
	<b>ROM (× 8-Bit)</b>	4 K
	<b>RAM (× 4-Bit)</b>	128
	<b>Minimum Instruction Execution Time</b>	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)
	<b>Package</b>	SOP020-P-0300

### Pin Assignment



SOP020-P-0300