❑ MN15G0202 , MN15G0402

Type	MN15G0202	MN15G0402
ROM (x8-bit)	2 K	4 K
RAM (x4-bit)	128	128
Package (Conventional Package)	SOP020-P-0300D *Lead-free (SOP020-P-0300)	
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 2 : 8-bit × 1 (pulse output, PWM 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, $1/2^6$, $1/2^{14}$ 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) • 4-ch. LED direct drive available (15 mA / 1.0 V)
A/D Inputs	10-bit × 4-ch. (with S/H)	
Zero-Cross Input	1	
Special Ports	Buzzer output (1 kHz, 2 kHz, 4 kHz : fosc = at 4 MHz)	
Notes	Auto-Reset circuit selectable (none, circuit 1, circuit 2) (mask option)	

Electrical Characteristics

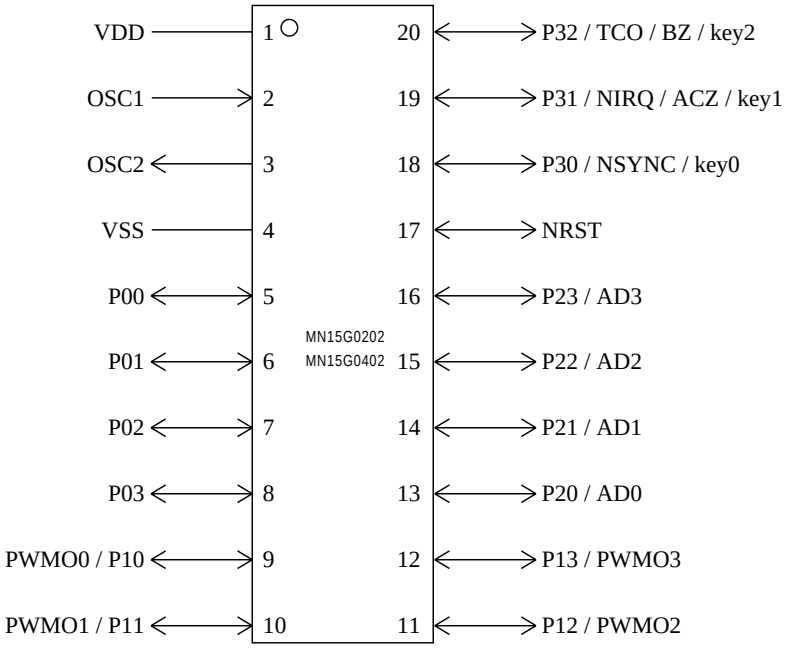
Supply current

Parameter	Symbol	Condition	Limit min	Limit typ	Limit max	Unit
Operating supply current	IDD1	fosc = 8 MHz (1/8 dividing)		1.5	3.0	mA
	IDD2	fosc = 4 MHz (1/8 dividing)		1.2	2.5	mA
Supply current at HALT	IDD3	fosc = 4 MHz (1/8 dividing)		0.3	0.6	mA
Supply current at SOTP	IDD4	ACZ = 1/2 VDD, Ta = 25°C		3.0	10.0	µA
	IDD5	ACZ = 1/2 VDD, Ta = −40°C to +85°C			20.0	µA
	IDD6	Ta = 25°C			1.0	µA
	IDD7	Ta = −40°C to +85°C			5.0	µA
Auto reset current consumption	IDD8			4.0	8.0	µA

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

Pin Assignment

( ) : Conventional Package



SOP020-P-0300D *Lead-free

(SOP020-P-0300)

Support Tool

In-circuit Emulator PX-ICE1500 + PX-PRB15G0202 / 0402-SOP020-P-0300

EPROM Built-in Type

Note) • Because of a special writing system, only a particular writer model manufactured by Data I/O is applicable.
• The mask option applies only to no auto reset circuit. (No other options are set.)

Type	MN15GP0402 [ES (Engineering Sample) available]
ROM (× 8-bit)	4 K
RAM (× 4-bit)	128
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	SOP020-P-0300D *Lead-free
(Conventional Package)	(SOP020-P-0300)

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