

MN102H55G

Type	MN102H55G	
ROM (×8-bit)	128 K	
RAM (×8-bit)	4 K	
Package	LQFP100-P-1414 *Lead-free	
Minimum Instruction Execution Time	With main clock operated	58 ns (at 3.0 V to 3.6 V, 34 MHz)
Interrupts	• $\overline{\text{RST}}$ pin • Watchdog • NMI pin • Timer counter 0 to 7 underflow • Timer counter 8 to 12 underflow • Timer counter 8 to 12 compare capture A • Timer counter 8 to 12 compare capture B • ATC ch.0 to 3 transfer finish • ETC ch.0 to 1 transfer finish • External 0 to 4 • Serial ch.0 to 4 transmission • Serial ch.0 to 4 reception • $\overline{\text{KI}}$ pin (OR) • A/D conversion finish	
Timer Counter	Timer counter 0 : 8-bit × 1 (prescaler, timer output, event count, clock supply for 16-bit timer, timer interrupts) Clock source 1/2 of system clock (BOSC) frequency; 1/4 of system clock (XI) frequency; system clock (BOSC); TM0IO pin Interrupt source underflow of timer counter 0 Timer counter 1 : 8-bit × 1 (serial clock generator, timer interrupts) Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 0, 4 Interrupt source underflow of timer counter 1 Timer counter 2 : 8-bit × 1 (serial clock generator, timer interrupts) Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 0, 4 Interrupt source underflow of timer counter 2 Timer counter 3 : 8-bit × 1 (A/D conversion start, timer interrupts) Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 0, 4 Interrupt source underflow of timer counter 3 Timer counter 4 : 8-bit × 1 (serial clock generator, timer output, event count, clock supply for 16-bit timer, timer interrupts) Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 0; TM4IO pin Interrupt source underflow of timer counter 4 Timer counter 5 : 8-bit × 1 (serial clock generator, timer interrupts) Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 0; system clock (BOSC) Interrupt source underflow of timer counter 5 Timer counter 6 : 8-bit × 1 (timer interrupts) Clock source 1/4 of system clock (XI) frequency; underflow of timer counter 0, 4 Interrupt source underflow of timer counter 6 Timer counter 7 : 8-bit × 1 (timer output, event count, timer interrupts) Clock source 1/4 of system clock (XI) frequency; underflow of timer counter 0; TM7IO pin Interrupt source underflow of timer counter 7 Connectable timer counter 0 to 7 Timer counter 8 : 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phase encoder input) Clock source underflow of timer counter 0, 4; TM8IB pin; 1/2 of system clock (BOSC) frequency; 2-phase encode of TM8IA pin/TM8IB pin (1 ×, 4 ×) Interrupt source underflow of timer counter 8; timer counter 8 compare capture A; timer counter 8 compare capture B	

Timer Counter (Continue)		Timer counter 9 : 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phase encoder input) Clock source underflow of timer counter 0, 4; TM9IB pin; 1/2 of system clock (BOSC); 2-phase encode of TM9IA pin/TM9IB pin (1 ×, 4 ×); TM9IC pin Interrupt source underflow of timer counter 9; timer counter 9 compare capture A; timer counter 9 compare capture B Timer counter 10 : 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phase encoder input) Clock source underflow of timer counter 0, 4; TM10IB pin; 1/2 of system clock (BOSC); 2-phase encode of TM10IA pin/TM10IB pin (1 ×, 4 ×) Interrupt source underflow of timer counter 10; timer counter 10 compare capture A; timer counter 10 compare capture B Timer counter 11 : 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phase encoder input) Clock source underflow of timer counter 0, 4; TM11IB pin; 1/2 of system clock (BOSC); 2-phase encode of TM11IA pin/TM11IB pin (1 ×, 4 ×) Interrupt source underflow of timer counter 11; timer counter 11 compare capture A; timer counter 11 compare capture B Timer counter 12 : 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phase encoder input) Clock source underflow of timer counter 0, 4; TM12IB pin; 1/2 of system clock (BOSC); 2-phase encode of TM12IA pin/TM12IB pin (1 ×, 4 ×) Interrupt source underflow of timer counter 12; timer counter 12 compare capture A; timer counter 12 compare capture B Timer counter 13, 14 : 8-bit × 2 (simple PWM output) Clock source 1/2 of system clock (BOSC); underflow of timer counter 0 Timer counter 15 : 16-bit × 1 (pulse width measurement) Clock source system clock (BOSC); 1/2 of system clock (BOSC); underflow of timer counter 0; TM15IB pin	
Serial Interface		Serial 0, 1 : 8-bit × 1 (transfer direction of MSB / LSB selectable, transmission / reception of 7, 8-bit length) Clock source 1/8 of timer counter 1 underflow; 1/8, 1/2 of timer counter 2 underflow; external pin Serial 2, 3 : 8-bit × 1 (transfer direction of MSB / LSB selectable, transmission / reception of 7, 8-bit length) Clock source 1/8 of timer counter 4 underflow; 1/8, 1/2 of timer counter 5 underflow; external pin Serial 4 : 8-bit × 1 (transfer direction of MSB / LSB selectable, transmission / reception of 7, 8-bit length) Clock source 1/8 of timer counter 1 underflow; 1/8, 1/2 of timer counter 5 underflow; external pin UART × 2 (common use with serial 3, 4) I²C × 2 (common use with serial 3,4; single master)	
I/O Pins	I/O	82	• Common use : 46 (address data separate 8-bit mode) • Common use : 53 (address data multiplex 8-bit mode)
A/D Inputs		10-bit × 8-ch. (with S/H)	
D/A Outputs		8-bit × 2-ch.	
PWM		16-bit × 5-ch. (timer counter 8 to 12)	
ICR		16-bit × 5-ch. (timer counter 8 to 12)	
OCR		16-bit × 5-ch. (timer counter 8 to 12)	
Notes		Address / data multiplex bus interface, address / data separate bus interface, 8-bit / 16-bit bus width selectable	

See the next page for electrical characteristics, pin assignment and support tool.

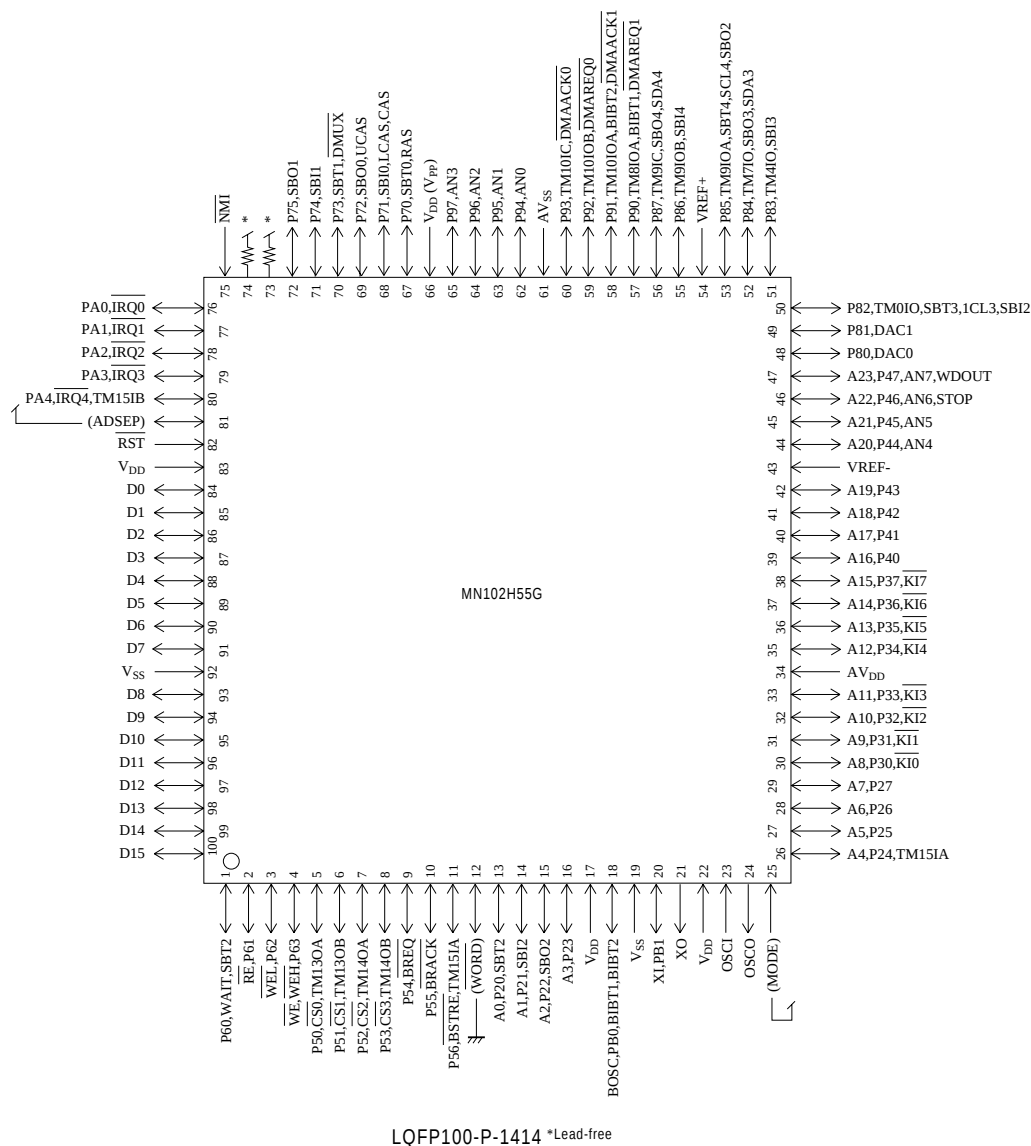
Electrical Characteristics

Supply current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDDopr	VI = VDD or VSS, output open f = 34 MHz , VDD = 3.3 V			50	mA
Supply current at STOP	IDDS	Pin with pull-up resistor is open all other input pins and Hi-Z state input/output			70	μA
Supply current at HALT	IDDH	pins are simultaneously applied VDD or VSS level f = 34 MHz , VDD = 3.3 V, output open			23	mA

(Ta = -40°C to +85°C , VDD = AVDD = 3.3 V , VSS = AVSS = 0 V)

Pin Assignment



* Use 33 kΩ to 50 kΩ

* Pin position in 16-bit bus width address data split memory extension mode.

Support Tool

In-circuit Emulator	PX-ICE102H55-LQFP100-P-1414	
Flash Memory Built-in Type	Type	MN102HF55G
	ROM (× 8-bit)	128 K
	RAM (× 8-bit)	4 K
	Minimum instruction execution time	66.6 ns (at 3.0 V to 3.6 V, 30 MHz)
	Package	LQFP100-P-1414 *Lead-free

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