

□ MN102H950F

Type	MN102H950F	
ROM (×8-bit)	External	
RAM (×8-bit)	10 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	<ul style="list-style-type: none"> • RST pin • Watchdog • NMI pin • Timer counter 0 to 9 underflow • Timer counter 10 to 14 underflow • Timer counter 10 to 14 compare capture A • Timer counter 10 to 14 compare capture B • ATC ch.0 to 3 transfer finish • External 0 to 4 • Serial ch.0 to 4 transmission • Serial ch.0 to 4 reception • A/D conversion finish 	
Timer Counter	<p>Timer counter 0 : 8-bit × 1</p> <p style="padding-left: 20px;">Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 8; TM0IO pin; system clock (BOSC)</p> <p style="padding-left: 20px;">Interrupt source underflow of timer counter 0</p> <p>Timer counter 1 : 8-bit × 1</p> <p style="padding-left: 20px;">Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 8, 9; timer counter 0 output</p> <p style="padding-left: 20px;">Interrupt source underflow of timer counter 1</p> <p>Timer counter 2 : 8-bit × 1</p> <p style="padding-left: 20px;">Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 8; TM2IO pin; timer counter 1 output</p> <p style="padding-left: 20px;">Interrupt source underflow of timer counter 2</p> <p>Timer counter 3 : 8-bit × 1</p> <p style="padding-left: 20px;">Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 8; TM3IO pin; timer counter 2 output</p> <p style="padding-left: 20px;">Interrupt source underflow of timer counter 3</p> <p>Timer counter 4 : 8-bit × 1</p> <p style="padding-left: 20px;">Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 9; TM4IO pin; system clock (BOSC)</p> <p style="padding-left: 20px;">Interrupt source underflow of timer counter 4</p> <p>Timer counter 5 : 8-bit × 1</p> <p style="padding-left: 20px;">Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 8, 9; timer counter 4 output</p> <p style="padding-left: 20px;">Interrupt source underflow of timer counter 5</p> <p>Timer counter 6 : 8-bit × 1</p> <p style="padding-left: 20px;">Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 9; TM6IO pin; timer counter 5 output</p> <p style="padding-left: 20px;">Interrupt source underflow of timer counter 6</p> <p>Timer counter 7 : 8-bit × 1</p> <p style="padding-left: 20px;">Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 9; TM7IO pin; timer counter 6 output</p> <p style="padding-left: 20px;">Interrupt source underflow of timer counter 7</p> <p>Timer counter 8 : 8-bit × 1</p> <p style="padding-left: 20px;">Clock source 1/2 of system clock (BOSC) frequency; system clock (BOSC); 1/4 of system clock (XI) frequency; TM8IO pin</p> <p style="padding-left: 20px;">Interrupt source underflow of timer counter 8</p>	

Timer Counter (Continue)	Timer counter 9 : 8-bit × 1
	Clock source 1/2 of system clock (BOSC) frequency; underflow of timer counter 8; TM9IO pin; timer counter 8 output
	Interrupt source underflow of timer counter 9
	Timer counter 10 : 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phase encoder input)
	Clock source underflow of timer counter 8, 9; TM10IOB pin; 1/2 of system clock (BOSC) frequency; 2-phase encode of TM10IOA pin/TM10IOB 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 8, 9; TM11IOB pin; 1/2 of system clock (BOSC) frequency; 2-phase encode of TM11IOA pin/TM11IOB 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 8, 9; TM12IOB pin; 1/2 of system clock (BOSC) frequency; 2-phase encode of TM12IOA pin/TM12IOB 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 : 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phase encoder input)	
Clock source underflow of timer counter 8, 9; TM13IOB pin; 1/2 of system clock (BOSC) frequency; 2-phase encode of TM13IOA pin/TM13IOB pin (1 ×, 4 ×)	
Interrupt source underflow of timer counter 13; timer counter 13 compare capture A; timer counter 13 compare capture B	
Timer counter 14 : 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phase encoder input)	
Clock source underflow of timer counter 8, 9; TM14IOB pin; 1/2 of system clock (BOSC) frequency; 2-phase encode of TM14IOA pin/TM14IOB pin (1 ×, 4 ×)	
Interrupt source underflow of timer counter 14; timer counter 14 compare capture A; timer counter 14 compare capture B	

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 6 underflow frequency; 1/8, 1/2 of timer counter 0 underflow frequency; 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 2 underflow frequency; 1/8, 1/2 of timer counter 4 underflow frequency; external pin
	UART × 4 (common use with serial 0 to 3)
	I ² C × 2 (common use with serial 1,3; single master)

I/O Pins	I/O	63	<ul style="list-style-type: none"> • Common use : 43 (use of full address, address data separate 16-bit mode) • Common use : 57 (use of address 16-bit, address data separate 8-bit mode) • Common use : 56 (use of full address, address data separate 16-bit mode) • Common use : 63 (use of address 16-bit, address data separate 8-bit mode)
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A/D Inputs	10-bit × 12-ch. (with S/H)
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D/A Outputs	8-bit × 4-ch.
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PWM	16-bit × 5-ch. (timer counter 10 to 14)
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ICR	16-bit × 5-ch. (timer counter 10 to 14)
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OCR	16-bit × 5-ch. (timer counter 10 to 14)
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Notes	Address / data separate bus interface; 8 / 16-bit bus width selectable; SRAM interface Address / data multiplex bus interface support
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See the next page for electrical characteristics, pin assignment and support tool.

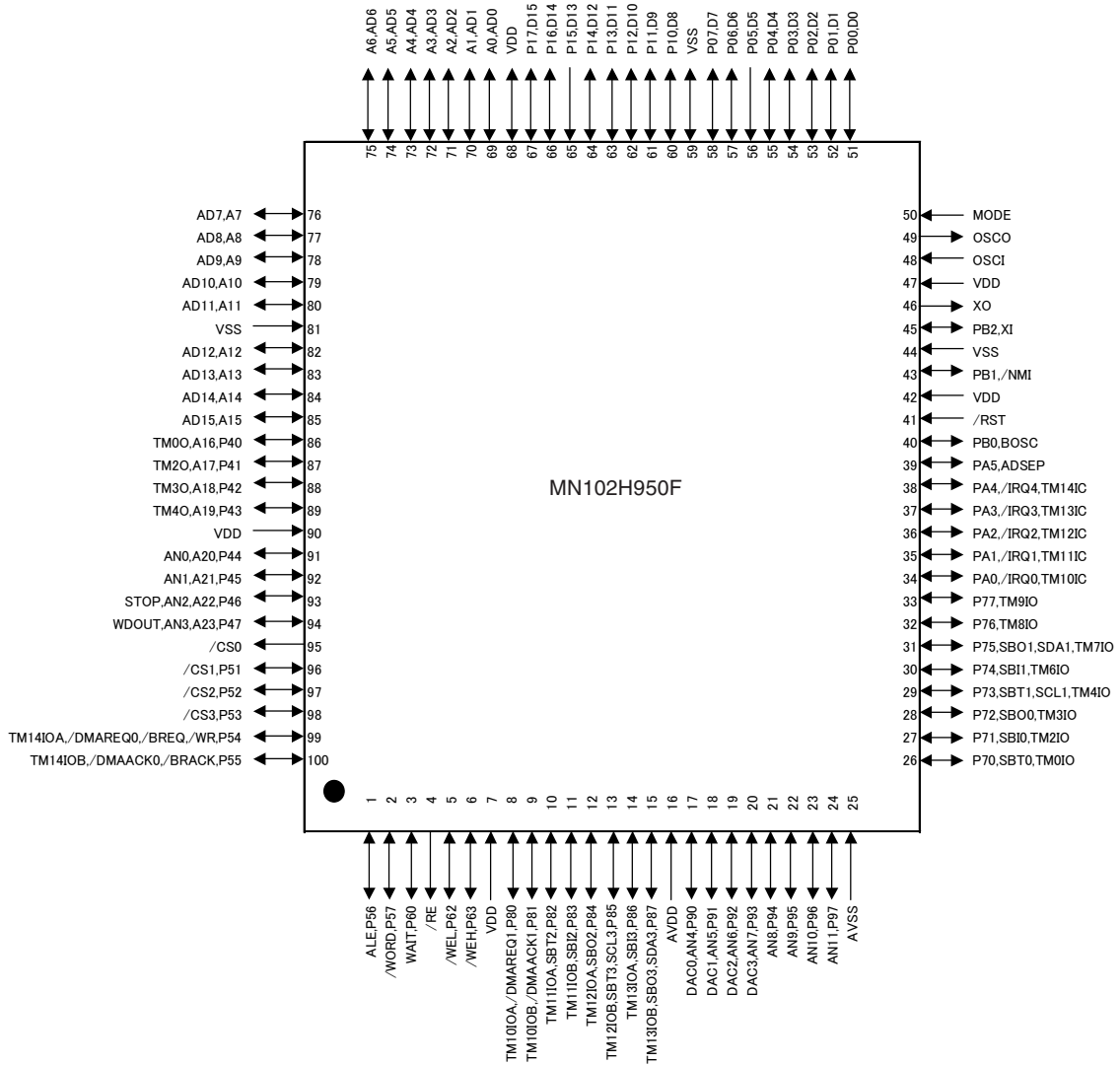
Electrical Characteristics

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			60	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			30	mA

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

Pin Assignment



LQFP100-P-1414 *Lead-free

Support Tool

In-circuit Emulator

PX-ICE102H930F-LQFP100-P-1414

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