❑ MN102H797

Type	MN102H797	
ROM (×8-bit)	16 K	
RAM (×8-bit)	1 K	
Package	LQFP064-P-1414 *Lead-free	
Minimum Instruction Execution Time	With main clock operated	83.3 ns (at 3.0 to 3.6 V, 12 MHz)
Interrupts	• $\overline{\text{RST}}$ pin • Watchdog • Timer counter 0, 1 underflow • Timer counter 2 under/overflow • Timer counters 2 to 4 compare capture A • External 0 to 3 • Serial ch.0 to 1 transmission • Serial ch.0 to 1 reception • A/D conversion finish • USB general-purpose • USBSOF	
USB Functions	Conforms to USB1.1. USB transceiver built-in Full-speed (12 Mbps) supported. 5 end points (FIFO built-in independently) FIFO size (EP0, 1, 2, 3, 4): 16, 64, 64, 64, 64 bytes • EP0 Control transfer IN/OUT (two ways) • EP1 to EP4 Interrupt/Bulk/Isochronous transfer supported. Settable to IN or OUT. Double Buffering function supported. When the MAXP size is set to a half or less of the MAXFIFO size for each EP, the Double Buffering function is made valid automatically.	
Timer Counter	Timer counter 0: 8-bit × 1 (timer output, event count, timer interrupt) Clock source ····· SYSCLK; prescaler 0; TM0IO pin Interrupt source ····· Timer counter 0 underflow Timer counter 1: 8-bit × 1 (timer output, event count, timer interrupt) Clock source ····· SYSCLK; prescaler 0; TM1IO pin Interrupt source ····· Timer counter 1 underflow (Connectable) Timer counters 0 to 1 Timer counter 2: 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phase encoder input) Clock source ····· SYSCLK; 1/8 of SYSCLK; timer counter 0 or 1 output; 2-phase encoding of TM2IOA pin/TM2IOB pin (1×, 4×) TM21OB pin Interrupt source ····· Timer counter 2 under/overflow; timer counter 2 compare capture A; timer counter 2 compare capture B Timer counter 3: 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phae encode input) Clock source ····· SYSCLK; 1/8 of SYSCLK; timer counter 0 or 1 output; 2-phase encoding TM3IOA pin/TM3IOB pin (1×, 4×) TM31OB pin Interrupt source ····· Timer counter 3 compare capture A Timer counter 4: 16-bit × 1 (timer output, event count, input capture, PWM output, 2-phae encode input) Clock source ····· SYSCLK; 1/8 of SYSCLK; timer counter 0 or 1 output; 2-phase encoding TM4IOA pin/TM4IOB pin (1×, 4×) TM41OB pin Interrupt source ····· Timer counter 4 compare capture A	

Serial Interface		Serial 0: 8-bit × 1 (transfer direction of MSB/LSB selectable; transmission / reception of 7, 8-bit length) Clock source ····· 1/2 or 1/16 of timer counter 0 output; external pin Serial 1: 8-bit × 1 (transfer direction of MSB/LSB selectable; transmission / reception of 7, 8-bit length) Clock source ····· 1/2 or 1/16 of timer counter 0 output; external pin UART × 2 (common use with serial 0 and 1)
I/O Pins	**I/O**	50 • Common use : 30 (pull-up resistance specifiable)
A/D Inputs		10-bit × 8-ch. (with S/H)
Special Ports		USB ports (D+, D-), LED drive ports (P30, P31, P32, P33)
Notes		4 multiply PLL built-in, generation of internal 48 MHz at external oscillation 12 MHz

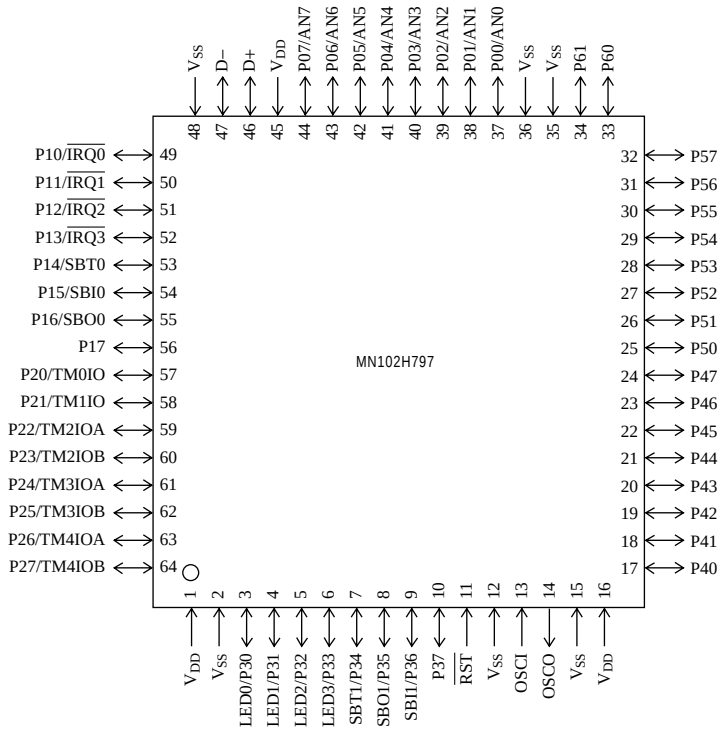
Electrical Characteristics

A/D characteristics

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Non-linear error		10-bit			± 3	LSB
A/D conversion time		At external oscillation frequency 12 MHz	4			µs
Analog input voltage	VIA		VSS		VDD	V

(Ta = 25°C , VDD = 3.3 V , VSS = 0 V)

Pin Assignment



LQFP064-P-1414 *Lead-free

SupportTool

In-circuit Emulator	PX-ICE102H79-LQFP064-P-1414 (under planning)	
Flash Memory Built-in Type	Type	MN102HF797 (under planning)
	ROM (× 8-bit)	16 K
	RAM (× 8-bit)	1 K
	Minimum instruction execution time	83.3 ns (at 3.0 V to 3.6 V, 12 MHz)
	Package	LQFP100-P-1414 *Lead-free

Request for your special attention and precautions in using the technical information and semiconductors described in this material

(1) An export permit needs to be obtained from the competent authorities of the Japanese Government if any of the products or technologies described in this material and controlled under the "Foreign Exchange and Foreign Trade Law" is to be exported or taken out of Japan.

(2) The technical information described in this material is limited to showing representative characteristics and applied circuits examples of the products. It neither warrants non-infringement of intellectual property right or any other rights owned by our company or a third party, nor grants any license.

(3) We are not liable for the infringement of rights owned by a third party arising out of the use of the product or technologies as described in this material.

(4) The products described in this material are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
- Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
- Any applications other than the standard applications intended.

(5) The products and product specifications described in this material are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.

(6) When designing your equipment, comply with the guaranteed values, in particular those of maximum rating, the range of operating power supply voltage, and heat radiation characteristics. Otherwise, we will not be liable for any defect which may arise later in your equipment.
Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.

(7) When using products for which damp-proof packing is required, observe the conditions (including shelf life and amount of time let standing of unsealed items) agreed upon when specification sheets are individually exchanged.